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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,820	12/04/2003	Craig Andrews	LYNN/0169	7460
24945	7590	09/28/2006		
STREETS & STEELE 13831 NORTHWEST FREEWAY SUITE 355 HOUSTON, TX 77040				
			EXAMINER ECHELMEYER, ALIX ELIZABETH	
			ART UNIT 1745	PAPER NUMBER

DATE MAILED: 09/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/727,820	<b>Applicant(s)</b> ANDREWS, CRAIG	
	<b>Examiner</b> Alix Elizabeth Echelmeyer	<b>Art Unit</b> 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.138(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6-1-04</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Priority***

1. Applicants claim to priority to Provisional Application 60/431,009 is acknowledged.

### ***Specification***

2. The disclosure is objected to because of the following informalities: on page 3, on line 2 and in the second paragraph, "plainer" should be "planar."

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-10 and 12-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Milgate et al. (US Patent 6,852,441).

Regarding claims 1 and 12, Milgate et al. teach a fuel cell stack having reinforcing members as support frames to restrict stress and minimize strain in the fuel

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cell frames caused by high internal pressure (column 3 lines 35-63). For fuel cells having a cylindrical frame, the reinforcing member is a cylinder surrounding the outside of the frame. As seen in Figures 1 and 3, the frames are generally planar.

Regarding claims 2, 4, 16 and 17, the band is on the perimeter of the fuel cell (abstract, Fig. 1). Since these claims include product-by-process limitations, the method by which the band is put on the outside of the stack is not given patentable weight.

As for claim 3, the reinforcing cylinder is made of metal or rigid plastic (abstract).

Regarding claim 5, the cell frames are plastic (column 2 lines 40-63; column 4 line 56).

As for claims 6 and 7, Milgate et al. teach that the reinforcing cylinder is in place to restrict the stress and strain caused by the internal pressure from the fluids required for the operation of the fuel cell (abstract, column 3 lines 35-64). Thus, the fluids in the stack would be pressurized, pressing out against the reinforcing member and placing the member in tension.

With regard to claims 8-10, Milgate et al. teach a plurality of reinforcing rings to help contain fuel cell frames not capable of withstanding internal pressure (column 2 lines 46-54; column 3 lines 6-11). The plurality of bands can reinforce a single cell or a plurality of cells, or a plurality of substacks within a stack.

Regarding claim 13, Milgate et al. teach an electronically conductive bipolar plate (reference numeral 213 in Figure 5).

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Milgate et al. in view of Yeager et al. (US Pre-Grant Publication 2002/0177027).

The teachings of Milgate et al. as discussed above are incorporated herein.

Milgate et al. teach the reinforced fuel cell system of the instant application but fail to teach that the reinforcing bands comprise an aromatic polyamide.

Yeager et al. teach the use of reinforcing fibers, such as aromatic polyamide fibers, in a variety of conductive components in fuel cells (abstract, [0080]).

Yeager et al. further teach that these materials increase stiffness, toughness, heat resistance and conductivity in the components in which they are used.

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It would be desirable to use aromatic polyamide fibers as taught by Yeager et al. in the reinforcing bands of Milgate et al. in order to increase stiffness, toughness, heat resistance and conductivity in the bands.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use aromatic polyamide fibers in the reinforcing bands of Milgate et al. as taught by Yeager et al. in order to increase stiffness, toughness, heat resistance and conductivity in the bands.

8. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milgate et al.

The teachings of Milgate et al. as discussed above are incorporated herein.

Milgate et al. teach the reinforced fuel cell stack of the instant invention but fail to teach that the bipolar plate has a perimeter edge that is radially inward from the perimeter edge of the polymer frames. It would have been an obvious matter of design choice to reduce the radius of the bipolar plates, for example to ensure that they would not touch the conductive reinforcing bands and short the system, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. MPEP 2144.04 (IV).

As for claim 14, Milgate et al. teach that the reinforcing bands may be electrically conductive (column 3 lines 6-18).

***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wozniczka et al. (US Patent 5,789,091).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is 571-272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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SUPERVISORY PATENT EXAMINER